



Amalgam Separator Resource Sheet

Why should I install an amalgam separator?

By installing an amalgam separator, your office will be removing up to 99.9% of the amalgam from the waste stream, thereby doing your part to eliminate mercury pollution in the environment. Chairside traps collect the large chunks of amalgam down to approximately 0.7mm when restorations are placed or removed. A wet vacuum filter system is capable of removing particles down to 0.42mm (40 mesh), when the fine filter is installed. Chairside traps combined with a vacuum filter can remove 40-80% of the total mass of amalgam particles from the vacuum line system. With the installation of an approved amalgam separator and proper operation of the amalgam removal system, dental offices can prevent up to 99.9% of their amalgam waste from entering the sanitary sewer system and contributing to the accumulations of mercury in our lakes and streams.

Not all amalgam separators are equally effective. All separators listed on this resource sheet are ISO11143-certified and are capable of removing at least 95% of the amalgam particles. It is recommended that you select an amalgam separator with at least 99% removal efficiency that can remove dissolved mercury through ion exchange process.

Commercial separators



Importance of tested flow rate or tank capacity

It is very important to size your amalgam separator at your office in accordance with manufacturer specifications. With flow-through separators, the flow rate entering the separator should not exceed the tested flowrate during all operations or maintenance procedures at the office, including amalgam removal or placement, or flushing of the vacuum lines. When excessive flow is encountered, most models have a bypass system that allows the wastewater to pass through the system with little or no treatment. This allows larger quantities of amalgam downstream, thus reducing the removal efficiency of the separator. Your vendor can advise you on flow-through models that include adequate tanks and flow restrictors for your office. With batch-treatment separators, exceeding the daily holding capacity or decanting rate during operations will reduce the removal efficiency.

Separator maintenance considerations

Each amalgam separator requires some form of maintenance to remove the collected amalgam. Some units require daily decanting, while others require replacement of the whole unit or containment unit every 3-18 months, depending on the size of collection tanks and volumes generated. If air abrasion is used, the amalgam separator will accumulate solids at a faster rate, requiring more frequent canister or unit recycling or replacement. If the amalgam separator you purchase does not include a recycling service, contact your amalgam waste recycler, as most recyclers accept the separator amalgam sludge or

canister/containment unit with their usual amalgam disposal. Please refer to the “Dental Waste Best Management Practices” resource sheet for detailed information, including a list of recycling vendors. Some manufacturers have designed a clear amalgam collector housing or another type of indicator to enable dental offices to change out the collector only when it is full to reduce replacement cost and aid in visually identify malfunctions with separators during operation.

Importance of neutral line cleansers

Cleaning of the suction lines with a proper line cleaner is recommended for sanitizing and deodorizing with most separators. Chlorine-based cleaners, or highly caustic (pH higher than 10) or acidic cleaners (pH lower than 4), are not recommended, as they can damage your separator and reduce its removal efficiency by dissolving amalgam particles which can pass through the separator. Chlorine bleach (sodium hypochlorite) is one of the worst offenders by mobilizing mercury from amalgam. The use of enzymatic and neutral pH cleaners are recommended. In a resource sheet titled, “Environmentally Preferable Evacuation Line Cleaners,” PACE has put together a list of line cleaners that do not appear to dissolve mercury from amalgam. In addition, a new line cleaner on the market (Purevac Hg) claims to bind smaller suspended and dissolved amalgam particles into larger particles, making them easier to capture by their amalgam separator system.



Vacuum filter considerations

Because the amalgam separator captures far more than the vacuum pump filter, dental offices with a wet pump vacuum will not need to change the vacuum filter as frequently, or at all. The replacement cost and maintenance time associated with the previous use of the vacuum filter can partially offset the cost and time associated with the operation of amalgam separators.

Answering the following questions will help determine which separator will work best at your office.

1. Does your office use a wet vacuum or a dry vacuum system?
2. How many operatories are served by your vacuum system?
3. How much physical space is available for the unit?
4. Do you want to install an amalgam separator at individual chairs where restorative work is performed, or in one central location that services all the chairs?
5. Do you need to install the separator ahead of or after your vacuum pump system?
6. What is the flow rate from your operatories during “peak” flow?
7. What is the total flow in one working day?
8. Do you lease or own your office space? (If leasing, what are the terms of your lease for maintaining and modifying vacuum, sewer line, and electrical utilities?)
9. How many chairs are in your office?

Manufacturers and vendors can assist you in recommending a unit to best fit your office configuration. If the office is in a building with several dental offices all plumbed to a central vacuum system, please consult with your building manager about amalgam separator compatibility with the vacuum system.

References:

- [1] Amalgam Management for Dental Offices. University of Wisconsin Solid & Hazardous Waste Education Center, February 2004. This report is available at: <http://www3.uwm.edu/Dept/shwec/publications/cabinet/pdf/DentalAmalgam04.pdf>
- [2] Berglund, P.A., Diercks, R.W., Evaluation of Amalgam Removal Equipment and Dental Clinic Loadings to the Sanitary Sewer. MCES & MDA, December 2001.
- [3] Proper Operation of Amalgam Separators Memorandum. Metropolitan Council Environ. Services & Minnesota Dental Association, Mar. 2004.

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